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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Chien-Meen Hwang

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EXAMINER

TORRES, JUAN A

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/700,474	Applicant(s) HWANG ET AL.	
	Examiner Juan A. Torres	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

The modifications to the specification were received on 05/09/2007. These modifications are accepted by the Examiner.

In view of the amendment filed on 05/09/2007, the Examiner withdraws Specification objections of the previous Office action.

Response to Arguments

Applicant's arguments with respect to claims 1 and 6 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4, 6-9 and 11-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Chien (US 20040203472 A1) (using Eberle (US 20040002308 A1) paragraph [0078] and [0094]-[0097] for inherency of 802.11a short preambles for DC offset compensation (DCO)).

Regarding claims 1 and 6, Chien discloses recovering first and second components from the wireless signal by mixing the wireless signal with first and second

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carrier frequency signals, respectively, the second carrier frequency signal phase-shifted by a prescribed amount relative to the first carrier frequency signal (figures 19, 20 D and 20 E paragraphs [0132] and [0135]); determining first and second DC offset components based on filtering prescribed subcarrier components from a prescribed preamble portion of each of the first and second components, respectively (figures 19, 20 D and 20 E paragraphs [0019] and [0132] and [0135]. Eberle (US 20040002308 A1) paragraph [0078] and [0094]-[0097] for inherency of 802.11a short preambles for DC offset compensation (DCO)); and outputting corrected first and second components of the wireless signal, for recovery of the data, based on removing the first and second DC offset components from the first and second components, respectively (figures 19, 20 D and 20 E paragraphs [0132] and [0135]).

Regarding claim 2 and 7, Chien discloses claims 1 and 6, Chien also discloses supplying the first and second components to a digital finite-impulse-response filter configured for filtering the prescribed subcarrier components and outputting filtered samples figures 19, 20 D and 20 E paragraphs [0132] and [0135]. The accumulator or accumulator and dump are FIR filters); and averaging the filtered samples associated with the prescribed preamble portion to obtain the first and second DC offset components (figures 19, 20 D and 20 E paragraphs [0019] and [0132] and [0135]. Eberle (US 20040002308 A1) paragraph [0078] and [0094]-[0097] for inherency of 802.11a short preambles for DC offset compensation (DCO)).

Regarding claim 3 and 8, Chien discloses claims 2 and 7, Chien also discloses accumulating the filtered samples from within the prescribed preamble portion, the

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prescribed preamble portion identified based on detecting a first and a last of a prescribed number of short training symbols in the data (figures 19, 20 D and 20 E paragraphs [0019] and [0132] and [0135]. Eberle (US 20040002308 A1) paragraph [0078] and [0094]-[0097] for inherency of 802.11a short preambles for DC offset compensation (DCO)).

Regarding claim 4 and 9, Chien discloses claims 3 and 8, Chien also discloses detecting the short training symbols, including detecting the first and the last of the short training symbols, each of the short training symbols including the prescribed subcarrier components, the filtering including removing the prescribed subcarrier components from each short training sample for generation of the corresponding filtered sample (figures 19, 20 D and 20 E paragraphs [0019] and [0132] and [0135]. Eberle (US 20040002308 A1) paragraph [0078] and [0094]-[0097] for inherency of 802.11a short preambles for DC offset compensation (DCO)).

Regarding claim 11 and 12, Chien discloses claims 1 and 6, Chien also discloses digitally subtracting the first and second DC offset components from the first and second components, respectively (figures 19, 20 D and 20 E paragraphs [0019] and [0132] and [0135]. The subtraction in Figure 20D and 20 E is after the ADC of figures 6 and 7).

Claims 1, 6 and 11-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Birkett (US 20050058227 A1) (using Eberle (US 20040002308 A1) paragraph [0078] and [0094]-[0097] for inherency of 802.11a short preambles for DC offset compensation (DCO)).

Regarding claims 1 and 6, Birkett discloses recovering first and second components from the wireless signal by mixing the wireless signal with first and second carrier frequency signals, respectively, the second carrier frequency signal phase-shifted by a prescribed amount relative to the first carrier frequency signal (figure 4 paragraphs [0005] and [0033] and [0034]); determining first and second DC offset components based on filtering prescribed subcarrier components from a prescribed preamble portion of each of the first and second components, respectively (figure 4 paragraphs [0005] and [0033] and [0034]. Eberle (US 20040002308 A1) paragraph [0078] and [0094]-[0097] for inherency of 802.11a short preambles for DC offset compensation (DCO)); and outputting corrected first and second components of the wireless signal, for recovery of the data, based on removing the first and second DC offset components from the first and second components, respectively (figure 4 paragraphs [0005] and [0033] and [0034]).

Regarding claim 11 and 12, Birkett discloses claims 1 and 6, Birkett also discloses digitally subtracting the first and second DC offset components from the first and second components, respectively (figure 4 paragraphs [0005] and [0033] and [0034]. The subtraction in Figure 4 is after the ADC of figures 2 and 3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chien as applied to claims 4 and 9 above, and further in view of Wiss (US 20020097812 A1).

Regarding claim 4 and 9, Chien discloses claims 3 and 8, Chien also discloses

That the first and second components are I and Q components, respectively, the filtering including outputting the filtered samples in response to assertion of a signal representing the detection of the short training symbols (figures 19, 20 D and 20 E paragraphs [0019] and [0132] and [0135]. Eberle (US 20040002308 A1) paragraph [0078] and [0094]-[0097] for inherency of 802.11a short preambles for DC offset compensation (DCO)); Chien doesn't disclose normalizing the accumulated filtered samples relative to a number of samples having been accumulated to obtain the first and second DC offset components. Wiss discloses normalizing the accumulated filtered samples relative to a number of samples having been accumulated to obtain the first and second DC offset components (figure 1see paragraphs [0040] and [0058]-[0059]). Chien and Wiss are analogous art because they are from the same field of endeavor of OFDM communications. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the system disclosed by Chien the normalization technique disclosed by Wiss. The suggestion/motivation for doing so would have been to take into account the signal level fluctuations (Wiss paragraph [0059]).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- a) Mo (US 20040219884 A1) discloses estimating the receiver mixer IQ mismatch and digitally compensating the mismatch;
- b) Rawlins (US 20030128776 A1) discloses reducing or eliminating DC offset voltages when down-converting a signal in a communication system;
- c) Driesen (US 20050111525 A1) discloses estimating and compensating for the DC offset in an OFDM receiver; and
- d) Marsili (US 20050025041 A1) same assignee of the present Application discloses DC offset estimation and compensation in OFDM radio receivers by weighted averaging over a section of the training sequence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A. Torres whose telephone number is 571-272-3119. The examiner can normally be reached on 8-6 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Juan Alberto Torres
05-22-2007

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PRIMARY EXAMINER
6/11/07
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